

## CLAIMS

1. A DNA encoding a protein having a juvenile hormone acid methyltransferase activity, according to any one of (a) to (d) below:
  - 5 (a) a DNA encoding a protein comprising an amino acid sequence of SEQ ID NO: 2, 4, 6, 8, or 10;
  - (b) a DNA comprising a coding region for a nucleotide sequence of SEQ ID NO: 1, 3, 5, 7, or 9;
  - (c) a DNA encoding a protein comprising an amino acid sequence of SEQ ID NO: 2, 4, 6, 8, or 10, wherein one or more amino acids are substituted, deleted, inserted, and/or added; or
  - (d) a DNA that hybridizes under stringent conditions with a DNA comprising a nucleotide sequence of SEQ ID NO: 1, 3, 5, 7, or 9.
2. A protein encoded by the DNA of Claim 1.
- 15 3. A DNA according to any one of (a) to (c) below:
  - (a) a DNA encoding an antisense RNA complementary to a transcription product of a DNA of Claim 1;
  - (b) a DNA encoding an RNA having a ribozyme activity which specifically cleaves a transcription product of a DNA of Claim 1; or
  - 20 (c) a DNA encoding an RNA which inhibits the expression of a DNA of Claim 1 by an RNAi effect.
4. A vector inserted with the DNA of Claim 1 or 3.
5. An agent for regulating molting/metamorphosis, reproduction, diapause, blastogenesis, behavior, polymorphism, or life span of an arthropod, comprising as an active ingredient the DNA of Claim 1, or a vector inserted with said DNA .
- 25 6. The agent of Claim 5, wherein the arthropod is an insect.
7. The agent of Claim 6, wherein the regulatory agent is a reproductive maturation accelerating agent, a diapause terminating agent, or a life span shortening agent for an adult insect, a metamorphosis inhibiting agent for a larva and a pupa, or a diapause inducing agent for a larva.
- 30 8. The agent of Claim 6, wherein the regulatory agent is a pest control agent or a cocoon-promoting agent.
9. An agent for regulating molting/metamorphosis, reproduction, diapause, blastogenesis, behavior, polymorphism, or life span of an arthropod, comprising as an active ingredient the DNA of Claim 3, or a vector inserted with said DNA.
- 35 10. The agent of Claim 9, wherein the arthropod is an insect.
11. The agent of Claim 10, wherein the regulatory agent is a reproductive maturation inhibiting

agent, a diapause inducing agent, or a life span elongating agent for an adult insect, a diapause inhibiting agent or a metamorphosis inducing agent for a larva.

12. The agent of Claim 10, wherein the regulatory agent is a pest control agent.
13. A transformed cell retaining the DNA of Claim 1 or 3, or a vector of Claim 4.
- 5 14. An individual transformed with the DNA of Claim 1 or 3, or a vector of Claim 4.
15. The individual of Claim 14, wherein the individual is an insect.
16. An antibody that binds to the protein of Claim 2.
17. The antibody of Claim 16, wherein the antibody is a monoclonal antibody.
18. An oligonucleotide comprising at least 15 nucleotides, wherein the oligonucleotide is  
10 complementary to the DNA of Claim 1 or its complementary strand.
19. A method of screening for a compound that binds to the protein of Claim 2, comprising steps (a) to (c) below:
  - (a) contacting a test compound with said protein;
  - (b) detecting the binding of the test compound and said protein; and
  - 15 (c) selecting a compound which binds to said protein.
20. A method of screening for a compound that regulates the activity of the protein of Claim 2, comprising steps (a) to (c) below:
  - (a) contacting a test compound with said protein;
  - (b) determining the activity of said protein; and
  - 20 (c) selecting a compound which increases or decreases the activity of said protein in comparison with a case where no test compound is administered.
21. A method of screening for a compound that regulates the expression level of a gene encoding the protein of Claim 2, comprising steps (a) to (d) below:
  - (a) providing a cell or cell extract comprising a DNA in which a reporter gene is functionally bound downstream of a promoter region of a gene encoding said protein;
  - 25 (b) contacting a test compound with said cell or cell extract;
  - (c) determining the expression level of said reporter gene in said cell or cell extract; and
  - (d) selecting a compound which increases or decreases the expression level of said reporter gene in comparison with a case where no test compound is administered.
- 30 22. A method of screening for a compound that regulates the expression level of a gene encoding the protein of Claim 2, comprising steps (a) to (c) below:
  - (a) contacting a test compound with an insect individual or tissue culture;
  - (b) determining the expression level of the gene encoding the protein of Claim 2 in said insect individual or tissue culture; and
  - 35 (c) selecting a compound which increases or decreases the expression level of said gene in comparison with a case where no test compound is administered.